CMMI^{SM} Frequently Asked Questions (FAQ)

June 2002

Introduction and Background

Why was the Capability Maturity Model® Integration (CMMI^{SM}) project initiated?

In the fall of 1997, a review of Software Engineering Institute (SEI) activities was conducted by the Office of the Under Secretary of Defense for Acquisition and Technology (hereafter referred to as OSD). An OSD-led team comprised of government, industry, and the SEI decided to focus on developing an integrated framework for maturity models and associated products. As a result of interest expressed by the model user community, the SEI had already initiated an effort to develop a framework to integrate existing maturity models.

What is the purpose of the CMMI project?

The purpose of the CMMI effort is to support process and product improvement and to reduce redundancy and eliminate inconsistency experienced by those using multiple standalone models. The purpose of the CMMI Product Suite is to improve efficiency, return on investment, and effectiveness of process-improvement efforts by organizations using models that integrate disciplines such as systems engineering and software engineering, which are inseparable in a product development endeavor.

What were the requirements for the CMMI Product Suite?

The requirements for the CMMI Product Suite were published in a specification developed by the CMMI steering group entitled *"A" Specification for the CMMI Product Suite.* This document (referred to hereafter as the A-Spec) is available on the Web at <http://www.sei.cmu.edu/cmmi/background/aspec1.4.html>.

Who was involved in developing the CMMI Product Suite?

The CMMI development project was a collaborative effort among members of industry, government, and the SEI. The project was sponsored by OSD and the National Defense Industrial Association (NDIA) Systems Engineering Committee.

How was the scope of the CMMI project determined?

The CMMI project was formed to improve the usability of CMM® technology for a set of disciplines beyond software engineering. This mission called for use of common terminology, common components, and common rules for constructing CMMI models. These models would be available in a form that would reduce the amount of training necessary and reduce the process improvement effort required by users improving processes in multiple disciplines, thus resulting in a savings of time, effort, and cost to the organization pursuing enterprise-wide process improvement.

As the CMMI concept developed, it became clear that the initial scope of the CMMI project should be restricted to a few of the disciplines most needed by government and industry, until the concept was proven. The selection of software engineering, systems engineering, and integrated product development CMMs was made by industry and government participants for the initial proof-of-concept phase.However, the CMMI Product Suite was designed to accommodate expansion of its discipline coverage and product and project life-cycle coverage. The first such expansion was the inclusion of Supplier Sourcing in the March 2002 release of Version 1.1. Expansion of the CMMI Framework to accommodate the coverage of additional disciplines such as security systems engineering is also possible. Expansion decisions will be made based on (1) the success of the initial release, (2) user community needs and support, and (3) availability of funding and participants to support development activities.

The CMMI models cover the same life cycles as the source models: Software CMM, EIA/IS 731 (the Systems Engineering Capability Model), and Integrated Product Development CMM.

Transition to CMMI from Other Models

Will the CMMI models make obsolete the models that are represented as source documents (SW-CMM, EIA/IS 731, and IPD-CMM)?

The models that were designated as the starting point for CMMI Product Suite development and identified as source documents in the A-Spec will no longer be updated or supported by their issuing organizations. The product suite is intended to replace these source models. As other disciplines are incorporated into the CMMI Product Suite, their source models will follow the same process. As improvements are incorporated into the CMMI Product Suite, the original source documents will become obsolete and less representative of industry practice.

While the CMMI models are being adopted by the community instead of the single-discipline models they replace, there will be a period during which the CMMI Product Suite and the source documents will both be in use and supported. The intent is to preserve any investment that an organization has made in implementing and using the source models.

Sunset of the SW-CMM is described in the article at <http://www.sei.cmu.edu/cmmi/adoption/sunset.html>. Sunset of EIA/IS 731 is being planned by its sponsoring organizations.

Why was the Software Acquisition CMM (SA-CMM) not included in initial CMMI models?

To confirm the effectiveness of the prototype CMMI Framework, the CMMI Product Team thought it important first to focus on the product development process. Because of the important relationship between product development and the acquisition process (see ISO/IEC 12207), the SA-CMM and the FAA iCMM were added as reference documents for CMMI development. The March 2002 expansion of model coverage for supplier sourcing has focused on the processes of acquiring software-intensive systems in a product development environment, but it can easily be used in an acquisition environment. The CMMI model that includes supplier sourcing is now available on the Web site with the other CMMI version 1.1 models, at <http://www.sei.cmu.edu/cmmi/models/models.html>. This version adds coverage for some of the key elements of acquisition within a development-based framework.

How do CMMI products relate to the International Organization for Standards (ISO) documents?

The CMMI A-Spec includes a requirement that the CMMI Product Suite be consistent and compatible with ISO/IEC 15504. Some of those involved in the CMMI effort are also involved in related ISO/IEC efforts as members of the JTC1/SC7 US Technical Advisory Group. This assures that future compatibility can be "continually improved." A mapping to compare ISO 9000:2000 with CMMI will be provided on the CMMI Web site soon.

Where can organizations get the most recent CMMI project information?

The primary source of information is the SEI Web site. The main CMMI Web page is available at <http://www.sei.cmu.edu/cmmi/>. The Web site provides links to CMMI products, publications, transition materials, and more.

Will other disciplines, such as program management and security, be considered for the CMMI Framework?

The CMMI Framework is designed to accommodate additional disciplines. Disciplines will be added to the CMMI Framework as determined by needs expressed by the CMMI model user community. The process for adding new disciplines is documented in the Concept of Operations (CONOPS) for CMMI, found at <http://www.sei.cmu.edu/cmmi/background/conops.html>.

The CMMI A-Spec requires that the CMMI Framework readily accommodate additional disciplines, but does not identify any specific disciplines for inclusion beyond those already included. As with other areas, program management and security are possible additions to future CMMI Product Suite releases, should the user community support their being added. To date, the supplier sourcing discipline has been added to the initial set of CMMI-covered disciplines.

Project Organization

What are the roles of the five CMMI project teams (steering group, product team, configuration control board, stakeholders/reviewers, and steward) in the process?

The steering group (SG) is composed of senior industry, government, and SEI professionals, and was chartered to provide direction to the project manager of the product team. This direction is based on user community needs. The SG approves CMMI products for review and public release and activates or deactivates the product team as required.

The product team (PT) was responsible for completing the elements of the CMMI Product Suite and for meeting the requirements of the CMMI A-Spec, which was prepared by the SG and approved by the OSD and NDIA sponsors. The PT was composed of industry, government, and SEI professionals. With the release of the Version 1.1 models, appraisal products, and training, the product team has been inactive. This team will be reactivated when new development activities are initiated.

The configuration control board (CCB) is the official mechanism used for controlling the configuration of the CMMI Product Suite. As such, the CCB has focused on ensuring the integrity of the CMMI Product Suite throughout its development life cycle. CCB membership consisted of representatives of the various disciplines directly addressed by CMMI, as well as representatives from the SG, the project manager, the steward, and the PT. Since the release of the Version 1.1 models, appraisal products, and training, the CCB is relatively inactive. This board will be engaged as needed as the product suite is maintained.

The stakeholders/reviewers reviewed the evolving products of the CMMI effort and provided comments to the PT. The stakeholders/reviewers are composed of industry and government organizations. This team is activated as needed to review materials as a way to quickly secure community feedback.

The SEI is the steward of the CMMI Product Suite. The role of the CMMI steward is to ensure the quality and widespread availability of the CMMI Product Suite and to support its adoption throughout government and industry. The steward also supports and facilitates the maintenance and evolution of the CMMI Product Suite.

How are the U.S. Armed Services participating?

Each Service provides members to participate on the CMMI steering group as well as on the stakeholder/reviewer group, the product team, and the CCB. Those stakeholder/reviewers representing the Services are responsible for soliciting and consolidating product review comments for their respective Service.

How have commercial and international organizations participated?

Commercial industry developers who use CMMs have participated as members of the product team, the CCB, the steering group, and as stakeholders/reviewers. If your company wishes to participate in the future evolution of the Product Suite, please contact Bob Rassa, Raytheon Electronic Systems, 310 / 334-0764, FAX 310 / 334-5770, email <rcrassa@raytheon.com>.

Who will own and sustain the CMMI Product Suite?

The SEI has been designated as the CMMI steward and will maintain the CMMI Product Suite as described in the CMMI stewardship plan. The SEI will maintain the CMMI Product Suite on behalf of the OSD and NDIA sponsors. It is also the stated intent of the CMMI team to arrange for the CMMI Product Suite to be issued as a standard by an ANSI organization to be identified at a future date. EIA and IEEE have been initially identified as organizations that will assist with that process. The participation of both organizations assures participation by both the systems engineering and software engineering communities.

CMMI Product Suite Information

How are CMMI models named?

Each CMMI model is given a name consisting of "CMMI-" followed by the abbreviation for the disciplines selected for that model. Where more than one discipline is modeled, the disciplines are listed with a slash (/) between them.

Examples are as follows:
- CMMI-SE/SW is the name given to the systems engineering and software engineering integrated model.
- CMMI-SE/SW/IPPD is the name given to the systems engineering, software engineering, and integrated product and process development integrated model.
- CMMI-SE/SW/IPPD/SS is the name given to the systems engineering, software engineering, integrated product and process development, and supplier sourcing integrated model.

What are the 'staged' and 'continuous' representations?

There are two representations of each CMMI model: staged and continuous. A representation reflects the organization, use, and presentation of model elements. Both representations contain essentially the same information.

Each representation consists of process areas that contain a purpose statement, introductory text, specific goals, specific practices, generic goals, and generic practices. For more information about these components, refer to Chapter 2, "Model Components" in any CMMI model.

Staged. The staged representation offers a roadmap to approach process improvement one predetermined step at a time. Process areas are grouped at maturity levels that provide organizations with a proven approach for process improvement. The staged representation prescribes the order of implementation for each process area according to maturity levels. Achieving each maturity level ensures that an adequate improvement foundation has been laid for the next maturity level, thus minimizing the organization's process improvement investment and risk while maximizing the benefits to the organization.

Continuous. The continuous representation offers a more flexible approach to process improvement. It is designed for organizations that would like to choose a particular process area or set of process areas based on trouble spots in the organization or a set of process areas that are closely aligned to the organization's business objectives. Process-improvement objectives are mapped to process areas in the model to identify the process areas to be implemented. As a process area is implemented, the specific practices and generic practices are grouped into capability levels. These capability levels enable the organization to implement the chosen process area(s) incrementally. The continuous representation also allows an organization to implement different process areas at different rates.

What are the differences between the two representations?

The following table outlines the differences between the two representations.

Continuous Representation	Staged Representation
Process areas are organized by process area categories.	Process areas are organized by maturity level.
I mprovement is measured using capability levels that reflect incremental implementation of a particular process area.	Improvement is measured using maturity levels that reflect the concurrent implementation of multiple process areas.
There are six capability levels, 0-5.	There are five maturity levels, 1-5.
There are an N+ number of practices because there are two types of specific practices: base and advanced.	There are an N number of practices because there is only one type of specific practice. The concept of advanced practices is not used, but is addressed through other means.
Capability levels are used to organize the generic practices.	Common features are used to organize the generic practices.
All generic practices are listed in each of the process areas.	Only the generic practices that are applicable to that maturity level are listed in the process areas at that level.
Generic practices exist for capability levels 1-5.	Generic practices exist for maturity levels 2-5. A subset of generic practices used in the continuous representation are applied to each process area based on its maturity level.
Overview text is written to describe the continuous representation.	Overview text is written to describe the staged representation.
An additional appendix describing equivalent staging is included, which allows a translation of a target profile into a maturity level.	There is no equivalence concept that allows a translation of maturity levels into a target profile.

How will my organization know which representation to use?

Three categories of factors may influence your decision: business, cultural, and legacy.

Business Factors: An organization with mature knowledge of its business objectives is likely to have a strong mapping of its processes to its business objectives. An organization such as this may find the continuous representation more useful to assess its processes and to determine how well the organization's processes support and meet business goals. The staged representation is widely used and maturity level ratings are often published. If your organization is concerned about benchmarking with your competitors and/or publishing results, the staged representation might be selected.

Cultural Factors: Cultural factors to consider when selecting a representation have to do with an organization's ability to deploy a process improvement program. For instance, an organization might select the continuous representation if the culture is experienced in process improvement or has a specific process that needs to be improved quickly. An organization that has little experience in process improvement might choose the staged representation, which provides additional guidance about the order in which changes should occur.

Legacy: Organizations with a strong systems engineering culture might be more familiar with the continuous representation, whereas software organizations may be more accustomed to a staged representation. If an organization has experience with a staged representation, it may be wise to

continue with the staged representation of CMMI, especially if it has invested resources and deployed processes across the organization that are associated with a staged representation. The same is true for an organization that has experience with a continuous representation. Both staged and continuous representations were made available so that the communities that have used the different representations successfully could continue in a manner that is comfortable and familiar to them.

An organization isn't forced to select one representation over another. In fact, an organization may find utility in both representations. It is rare that an organization will implement either representation exactly as prescribed. Organizations that are successful in process improvement often define an improvement plan that focuses on the unique problems of that organization and therefore use the principles of both the staged and continuous representations. For example, organizations that select the staged representation that are at maturity level 1 often implement the maturity level 2 process areas but also the Organizational Process Focus process area that is staged at maturity level 3. An organization that selects the continuous representation for guiding their internal process improvement effort might then choose the staged representation to conduct a formal assessment.

The following table shows the comparative advantages of each representation and may assist you with determining which representation is right for your organization.

Continuous Representation	Staged Representation
Grants explicit freedom to select the order of improvement that best meets the organization's business objectives and mitigates the organization's areas of risk.	Enables organizations to have a predefined and proven improvement path.
Reflects a newer approach that does not yet have the data to demonstrate its ties to return on investment.	Builds on a relatively long history of use that includes case studies and data that demonstrate proven return on investment.
Enables increased visibility into the capability achieved within each individual process area.	Focuses on a set of process areas that provide an organization with a specific capability that is characterized by each maturity level.
Provides a capability level rating that is primarily used for improvement within an organization and is rarely communicated externally.	Provides a maturity level rating that is often used in internal management communication, statements external to the organization, and during acquisitions as a means to qualify bidders.
Provides an easy migration from EIA/IS 731 to CMMI.	Provides an easy migration from SW-CMM to CMMI.
Affords an easy comparison of process improvement to ISO 15504, because the organization of process areas is derived from 15504.	Allows comparison to 15504, but the organization of process areas does not correspond to the organization used in 15504.
Allows improvements of different process areas to be performed at different rates of improvement.	Summarizes process improvement results in a simple form—a single maturity level number.

For more information about choosing a representation, please refer to "Choosing a CMMI Model Representation" at <http://www.stsc.hill.af.mil/crosstalk/2000/jul/shrum.asp>.

Is the framework core robust enough to support future models?

The architecture of the framework is designed to allow the future addition of other models as well as the integration of additional disciplines into the integrated models. The common components that relate to process management and improvement are likely to be appropriate for almost all CMMI models that have process improvement as a major concern. It is likely that, if the scope expands outside of engineering, additional subsets of shared components will be necessary, but the architecture is designed to readily handle this type of addition.

What should organizations that are using CMMs do now that CMMI products are available?

Organizations that are in the process of moving along the maturity continuum in applying one or more of the existing CMMs are encouraged to compare their current processes and approach with the CMMI model and create a transition strategy that meets their business needs. More information can be found in Chapter 6, "Using CMMI Models," of any CMMI model document.

Organizations that are already using another model for process improvement will need a transition strategy rather than an adoption strategy. Many of the lessons learned from EIA 731 and SW-CMM start-ups will be equally beneficial in a CMMI effort, since the issues are essentially the same. Organizations that are well on the way to a process improvement milestone may want to measure their progress before making the transition to CMMI.

Must my organization already have a CMM-based process improvement program under way to successfully implement CMMI?

No. It is helpful, but not required. Organizations that are not already using a model to guide their process improvement efforts can plan by exploring a CMMI model for areas of greatest immediate business value.

Who determines future CMMI requirements?

The user community will drive all future requirements. However, full implementation and expansion decisions derived from these requirements will be made based on the success of the initial CMMI release, user community support, and availability of funding and participants for further development.

Is there a procedure for requesting changes to the product suite?

Suggestions for improvement or correction of any product suite component are welcomed. Current product suite components for which you can submit change requests include all Version 1.1 CMMI models, Version 1.1 of the Standard CMMI Appraisal Method for Process Improvement (SCAMPI) Method Definition Document, Version 1.1 of the Appraisal Requirements for CMMI (ARC), and the Introduction to CMMI training courses (you can request changes only if you attend the course). Comments must be submitted using the CMMI change request form. For access to the form and instructions for submitting the form, see <http://www.sei.cmu.edu/cmmi/models/change-requests.html>.

Is there one assessment method, and will there be replacements for the evaluation methods, specifically the Software Capability Evaluation (SCE^{SM}) and the Software Development Capability Evaluation (SDCE)?

Version 1.1 of the CMMI Product Suite provides a common appraisal methodology across all CMMI models. This methodology provides support for both assessments (generally conducted for internal process improvement purposes) and evaluations (generally externally led and often conducted for purposes of source selection or contract process monitoring).

What is the CMMI Product Suite release approach and project schedule?

Improvements to the currently available CMMI models are not planned until 2005. Changes to appraisal products and training materials are not yet planned. Other project activities will be focused on aiding transition through supporting an infrastructure that can provide training and appraisals, and through providing workshops, presentations, and publications. The latest activities and plans can be found at <http://www.sei.cmu.edu/cmmi/adoption/adoption.html#useful>.

How can my organization get started with CMMI adoption?

As soon as possible, have two or three members of your improvement team take one of the Introduction to CMMI courses (see the course listings on the SEI Web site at <http://www.sei.cmu.edu/cmmi/training/>. These courses are also available through SEI-authorized Transition Partners, which are listed on the SEI Web site at <http://www.sei.cmu.edu/collaborating/partners/partners-tech.html#ICMMI>.

These members will first need to choose which representation of the model will best meet the organization's needs. For more information about choosing a representation, please refer to "Choosing a CMMI Model Representation" at <http://www.stsc.hill.af.mil/crosstalk/2000/jul/shrum.asp>.

Concurrently, if you are not already doing so, define your organization's two-to-three-year business goals (quality, cycle time, cost and schedule control, etc.), establish measures, and then collect baseline data that will tell you how well you are doing against those goals. Measurements will enable you to gauge the effectiveness of your process improvement program.

Then, you may be ready to select or have trained a lead appraiser. A list of currently authorized lead appraisers is on the SEI Web site at <http://www.sei.cmu.edu/managing/app.directory.html#scampi.leads>. An organizational infrastructure to support process improvement also needs to be considered and planned for. This infrastructure will include management support, appraisal team membership, and follow-on action teams.

CMMI

How does CMMI relate to ongoing national standards (including EIA 731)?

In general, the national standards address development disciplines, such as software engineering, systems engineering, configuration management, data management, and quality assurance. National standards strive to define top-level process requirements inherent in these disciplines. The CMMI effort, consistent with existing CMMs, is intended to support product and process improvement and to reduce redundancy and eliminate inconsistency when using separate stand-alone models. As such, the CMMI Product Suite strives to be consistent and support the general guidelines set forth in current national standards.

EIA 731, the Systems Engineering Capability Model, is a source document for CMMI. EIA initially designated EIA/IS 731 as an interim standard. It has now decided to upgrade it to a full EIA standard and to develop a sunset plan for EIA-731. It will continue EIA 731 as a standard to provide the opportunity for current users to begin their own transition to the CMMI on schedules compatible with their other business activities. Plans to progress CMMI to a national standard are being considered.

How does CMMI relate to the Federal Aviation Administration's integrated Capability Maturity Model (FAA-iCMM)?

The FAA developed the FAA-iCMM to increase the efficiency and effectiveness of process improvement by providing one single reference model that integrates engineering, management, and acquisition processes used in developing, managing, acquiring, and maintaining systems. Three CMMs were being used separately in the FAA, and the FAA-iCMM integrates all features and practices of those three source CMMs: the SE-CMM (V1.1), the SA-CMM (V1.01), and the SW-CMM (V1.1). The FAA-iCMM was developed in 1997 using the SEI's draft CMM integration[SM] guidelines that were evolving at that time.

Similarities: Both CMMI and the FAA-iCMM are models that offer guidance for integrated improvement of integrated processes. Both efforts have integrated multiple single-discipline models into a single multi-discipline model, have the same goals of increased efficiency and effectiveness of process improvement, and were developed by teams from government, industry, and the SEI.

Differences: There are differences between CMMI and the FAA-iCMM in terms of maturity of the models, the disciplines integrated, model representation, appraisal method, and implementation experience. For example:

- CMMI V1.1 currently integrates systems engineering, software engineering, IPPD, and supplier sourcing concepts; FAA-iCMM V1.0 integrates systems engineering, software engineering, and acquisition. Other concepts have been added in FAA-iCMM V2.0.

- CMMI is available in two separate representations: staged and continuous. FAA-iCMM is represented using a single architecture capturing both continuous and staging concepts.

- FAA-iCMM is proof of concept that CMM integration works. Through FAA participation on the CMMI Steering Group, FAA has continuously offered lessons learned to the CMMI project, including the use/adoption of all FAA-iCMM products (e.g., the model, the appraisal method, and training materials). The FAA periodically assesses CMMI products in relation to its business needs and plans to continue sharing lessons learned with the CMMI project. For more information, see <http://www.faa.gov/aio>.

What will change in the SEI Lead Appraiser program as a result of CMMI?

The SEI has upgraded the SEI Lead Appraiser program to include CMMI products. Specific details of the SCAMPI Lead Appraiser[SM] program are available on the Web at <http://www.sei.cmu.edu/managing/app.directory.html#descrip>.

How do I become an SEI transition partner for CMMI training and appraisal services?

The SEI conducted a solicitation of qualified organizations to deliver introductory training courses from the CMMI Product Suite. Organizations selected to be SEI transition partners for these courses

will be able to deliver this training within their organizations and/or for commercial purposes. The solicitation to deliver introductory training for commercial purposes has been concluded. For more information, including instructions on how to apply for an internal-use only training license, send email to <cmmi-tp-info@sei.cmu.edu>.

The SEI is seeking qualified organizations to deliver SCAMPI appraisals. Information about this opportunity, including instructions on how to apply, is available on the SEI Web site at <http://www.sei.cmu.edu/collaborating/partners/scampi.html>.

How does CMMI affect my investment in implementing previous CMMs?

Organizations that have already defined processes that adhere to one of the existing CMMs will find those processes easily map to the CMMI Product Suite. (A mapping from SW-CMM V1.1 with CMMI-SE/SW V1.1 is available at <http://www.stsc.hill.af.mil/cmmi/>. There is more available on the SEI Web site for EIA/IS 731 at <http://www.sei.cmu.edu/cmmi/adoption/adoption.html#comparisons>.)

The real value of the CMMI models becomes visible when maturity in multiple disciplines is desired. For example:

- Organizations that have started the core practices in more than one single-discipline CMMs could avoid spending additional effort by using CMMI products, since CMMI eliminates potential contradictions and provides an integrated set of common practices.

- Organizations that had previously focused only on software engineering maturity could benefit from the practices associated with the systems engineering discipline, such as more detailed best practices concerning requirements.

Is there a discussion forum for CMMI issues?

CMMI issues have been a focus at existing events like the Software Technology Conference (STC), the Software Engineering Process Group (SEPG), National Defense Industrial Association (NDIA), and Government Electronics and Information Technology Association (GEIA) conferences. In Fall 2001, the NDIA, in conjunction with the SEI, began conducting a CMMI Technology Conference and User Group, which offers opportunities to share information among early adopters in an open forum. The NDIA and the SEI also host quarterly CMMI Transition Workshops. Information about the conference and workshops will be posted on the SEI Web site at <http://www.sei.cmu.edu/cmmi/adoption/adoption.html#useful>.

For day-to-day issues, the SEI's Software Engineering Information Repository (SEIR) can be used. The SEIR provides a forum for the contribution and exchange of information about software engineering improvement activities, including CMMI. Members can exchange questions or tips and contribute experiences or examples to assist each other with their implementation efforts. The site requires you to register on first use. The SEIR is located at <http://seir.sei.cmu.edu/>.

Can the CMMI-SE/SW model be used for improving the processes in electrical and mechanical engineering disciplines?

Yes. The CMMI-SE/SW model guides engineering development of systems. We sought to ensure that the broader needs for system development practices were included in it, along with the "typical work products" applicable to the software community. More specific discipline areas like electrical and mechanical engineering may wish to supplement that guidance to address elements that have not been covered. For that and similar reasons, we provide a Microsoft® Word version of the model that can be tailored to meet specific needs. Over time, other disciplines may be added to the product suite, to the extent that this can be done without adding inordinate complexity to the model.

Is a customer management process included in the model?

No; not currently. Customer management is one of several valuable disciplines that may be added later (safety is another example). The model's emphasis on "relevant stakeholders" and on "validating [customer] requirements" can be seen as alluding to the importance of this area.

Acquisition

What is the relationship between CMMI and acquisition reform?

The CMMI effort and objectives are consistent with and support the tenets of acquisition reform. CMMI emphasizes an integrated "systems" view, which is also emphasized in various acquisition reform initiatives. The concept of performance-based acquisition is also reflected in the CMMI concept. CMMI will enhance the ability to manage risk and improve internal processes, both of which are integral to acquisition reform.

Will CMMI be used for acquisition management?

The CMMI model that was recently released (CMMI-SE/SW/IPPD/SS, V1.1) adds coverage of the acquisition discipline in the area of "supplier sourcing." This model is intended to cover needs expressed by industry for increased coverage of the practices driven by such things as teaming and increased use of commercial off-the-shelf (COTS) products and outsourcing, as well as the need for government agencies to acquire systems more effectively.

How does CMMI relate to the Defense Acquisition Work Force Improvement Act?

In 1990, Congress passed the Defense Acquisition Work Force Improvement Act (DAWIA), which provided structure to the acquisition workforce by creating the concept of the acquisition corps. DAWIA sets forth training and education requirements for civilian positions and military billets that are in the acquisition work force. Many of the technical courses taught to the acquisition work force contain information on CMMs in general. CMMI now provides an additional source of training material for future DAWIA course updates and offerings.

Software

What ever happened to Version 2 of the SW-CMM?

In October 1997, the Office of the Undersecretary of Defense for Acquisition and Technology, the sponsor of the SEI, directed the SEI to place higher priority on CMM Integration. As part of this direction, the successor to the Software CMM Version 1.1 was to be incorporated into the CMMI Product Suite.

On August 11, 2000, the CMMI Project released Version 1.0 of the integrated model for systems and software engineering (CMMI-SE/SW, Version 1.0) for public use. One of the three major source models and standards used in its development was Version 2 Draft C of the Software CMM from October 1997. Nearly all of the content and value obtained from the public review of the Version 2 drafts of the Software CMM have been incorporated and retained in the CMMI models.

If you are familiar with any of the Version 2 drafts of the Software CMM, you will recognize much of their content in the CMMI models.

Will the CMMI Project release a software model?

There will be discipline-specific CMMI models. All CMMI models are generated from a framework of common and discipline-specific components to ensure that they are as identical in content as they should be where they overlap. At some future date, prospective CMMI model users will be able to select both the model representation desired (staged or continuous) and the specific disciplines to be covered (e.g., systems engineering, software engineering, Integrated Product and Process Development [IPPD], or supplier sourcing).

How will an organization utilizing only the Software CMM use CMMI?

Organizations that are using only the Software CMM will be able to use CMMI-SE/SW. The additional material that is explicitly provided in CMMI will enable the organization to focus on practices that were implicit in the SW-CMM. The organizations should also focus on the amplifications for software engineering within the engineering-shared process areas and take advantage of any systems engineering amplifications that are helpful.

Does CMMI cover material that the SW-CMM does not?

CMMI covers the same material as the SW-CMM, although some topics are given more extensive treatment that reflects the engineering community's learning over the past 10 years. Coverage for elements like Risk Management and Measurement and Analysis, for example, is crisper and more definitive than in the SW-CMM. One model is not more "official" than the other; CMMI builds on the experience gained from use of the SW-CMM and other models. Organizations that are using the SW-CMM can easily adjust to the expanded coverage that CMMI provides for the enterprise.

For details about the differences (and similarities) between CMMI and SW-CMM, see the mapping available at <http://www.stsc.hill.af.mil/cmmi/>. There are sound reasons to be looking at a CMMI-SE/SW Version 1.1 model, even if you've considered your organization to be "software engineering only." But the decision on whether or not to transition to the CMMI models should be based on your business situation and business needs, and your planning should be based on what CMMI-based services are available. CMMI-based products and services consist of model training, lead appraiser training, and appraisal services.

Should my software process improvement team (e.g., SEPG) be looking at CMMI instead of SW-CMM V1.1?
Another way to phrase this question is: "We've been deploying improvements based on SW-CMM Version 1.1 for several years; should we now transition to a CMMI model?" There is no simple answer to this question. To help answer, it is helpful to first identify some of the differences between SW-CMM Version 1.1 and CMMI-SE/SW Version 1.1:

	SW-CMM V1.1	**CMMI-SE/SW V1.1**
Content	Focused on software engineering organizations	• More general, but provides many examples specific to engineering organizations • Contains 80% of the content of SW-CMM Version 2 Draft C from late 1997 • Expands Software Product Engineering into 6 process areas for a richer coverage of the software life cycle
Creation	February 1993	December 2001

So there are sound reasons to be looking at a CMMI-SE/SW Version 1.1 model, even if you've considered your organization to be "software engineering only." But the decision on whether or not to make the transition to the CMMI models should be based on your business situation and business needs, and your planning should be based on what CMMI-based services are available.

CMMI-based products and services consist of model training, lead appraiser training, and appraisal services.

Model Interpretation

What will be available to help users interpret the technical elements of the CMMI models?

This FAQ provides insights into the approaches that the model authors took that may need explanation, clarification, or examples beyond those contained in the model to address questions raised by model users. We also publish articles, papers, and presentations about various aspects of the models on the SEI Web site at <http://www.sei.cmu.edu/cmmi/adoption/adoption.html>.

What is the difference between the terms "stakeholder" and "relevant stakeholder"?

"Stakeholder" is defined as "a group or individual who is affected by or is in some way accountable for the outcome of an undertaking." "Relevant stakeholder" is a subset of the term "stakeholder" and describes people or roles that are designated in the plan for stakeholder involvement. Since "stakeholder" may describe a very large number of people, a lot of time and effort would be consumed by attempting to deal with all of them. For this reason, "relevant stakeholder" is used in most practice statements to describe the people identified to contribute to a specific task.

What is addressed by GP 2.2, Plan the Process, and what is the relationship of this generic practice to process areas that have specific practices that address plans and strategies?

Every process area has a generic practice (GP 2.2) that addresses planning. GP 2.2, Plan the Process, addresses the planning of the overall process for a specific process area. The purpose of this generic practice is to determine what is needed to perform the process and achieve the established objectives, prepare a plan for performing the process, and get agreement on the plan from relevant stakeholders. In some process areas (Project Planning, Risk Management, Integrated Project Management, Organizational Training, Verification, Validation, and Product Integration), there are specific practices that also address developing strategies or plans. Where there are both generic and specific practices that address planning, GP 2.2 addresses overall planning for the entire process area, whereas the specific practices address more detailed and focused planning.

In the process areas that have both a generic and specific practice, the elaboration that accompanies GP 2.2 explains the differences between the generic practice and the specific practice.

Are a configuration management plan and a quality assurance plan expected? Where is this covered in the model?

Configuration management and quality assurance plans are not explicitly addressed in specific practices. Instead, GP 2.2, Plan the Process, covers the activities expected in a configuration management and quality assurance plan. These may be separate plans, or part of a more inclusive plan that meets organizational needs.

Is the term "functional analysis" as used in the model problematic to an organization in which object-oriented (OO) techniques are used?

The term "functional analysis" was selected to be universally applicable, and there is no intention to exclude OO. In Requirements Development, SP 3.2, it says:

"The definition of functionality, also referred to as 'functional analysis', is the description of what the product is intended to do. The definition of functionality can include actions, sequence, inputs, outputs, or other information that communicates the manner in which the product will be used. "

"Functional analysis is not the same as structured analysis in software development and does not presume a functionally oriented software design. In object-oriented software design, it relates to defining the services. The definition of functions, their logical groupings, and their association with requirements is referred to as a functional architecture."

Where is the concept of "documented procedure" addressed?

The concept of a documented procedure is handled by the generic goals that says that you perform a process according to a managed or defined process. The generic practices associated with these generic goals include documenting the process and procedures that you use. Although the term "according to a documented procedure" is not explicitly used in CMMI models, the phrase "establish and maintain" is used. This phrase connotes a meaning beyond the component terms; it includes documentation and usage. For example, "Establish and maintain an organizational policy for planning and performing the organizational process focus process" means that not only must a policy be formulated, but it also must be documented and used throughout the organization

Is an independent quality assurance group required?

Independence is not required; objectivity is required. There are several places in the model where this is described.

In the introductory notes of Process and Product Quality Assurance, it says, "Objectivity in process and product quality assurance evaluations is critical to the success of the project. Objectivity is achieved by both independence and the use of criteria. Traditionally, a quality assurance group that is independent of the project provides this objectivity. It may be appropriate in some organizations, however, to implement the process and product quality assurance role without that kind of independence. For example, in an organization with an open, quality-oriented culture, the process and product quality assurance role may be performed, partially or completely, by peers; and the quality assurance function may be embedded in the process."

In an elaboration under GP 2.1, Establish an Organizational Policy, it says, "This policy establishes organizational expectations for objectively evaluating whether processes and associated work products adhere to the applicable process descriptions, standards, and procedures. This policy also establishes organizational expectations for process and product quality assurance being in place for all projects. Process and product quality assurance must possess sufficient independence from project management to provide objectivity in identifying and reporting noncompliance issues."

Where is the senior management review of commitments addressed in the model?

Senior management review is addressed in GP 2.10, Review Status with Higher-Level Management: "Review the activities, status, and results of <process area> with higher level management and resolve issues." The Overview section of the model provides a detailed description of the GP that says:

"The purpose of this generic practice is to perform the direct day-to-day monitoring and controlling of the process. Appropriate visibility into the process is maintained so that appropriate corrective action can be taken when necessary. Monitoring and controlling the process involves measuring appropriate attributes of the process or work products produced by the process."

Where is system testing covered in the model?

System testing is addressed in the verification and validation strategies that are described in SP 1.1 in the Verification and Validation process areas. However, system testing is not a term used in the model, since the terms "system" and "testing" can be interpreted in many ways. The term "product" and "product component" were used in CMMI for consistency. The term "system" was not selected for use because of its multiple interpretations across the various disciplines. Also, the term "verification" was chosen instead of "testing," since testing is only one method of verification.